What is claimed is:

1. An ion delivery system for a mass spectrometer having an ionization source for providing a stream of ions, and ion trap, a detector and an ion guide for guiding said ion stream from the ionization source toward the ion trap, said ion delivery system comprising.

(a) gating apparatus adapted to be placed between said ion guide and said ion trap for receiving said ion stream and for projecting ions from said ion stream in pulses toward said ion trap; and

(b) scaling apparatus operatively connected to said gating apparatus for selectively controlling the number of ions in each of said pulses delivered to said ion trap.

2. The ion delivery system as recited in claim 1, wherein said scaling apparatus comprises at least one ion lens apparatus.

3. The ion delivery system as recited in claim 1, wherein said gating apparatus comprises at least one ion lens apparatus.

4. The ion delivery system as recited in claim 1, wherein said scaling apparatus comprises:

(a) a first ion lens adapted to be located between said ion guide and said gating apparatus; and

(b) a second ion lens adapted to be located between said gating apparatus and said ion trap and for functioning in conjunction with said first ion lens.

5. The ion delivery system as recited in claim 4, further comprising an aperture ion lens adapted to be placed between said second ion lens and said ion trap.

6. The ion delivery system as recited in claim 1, wherein said scaling apparatus is a ion focussing lens adapted to be placed between said ion guide and said gating apparatus and said gating apparatus comprises an ion lens that is in a cooperating ion focussing relationship with said ion focussing lens for focussing said pulses.

7. The ion delivery system as recited in claim 6, further comprising an aperture lens adapted to be placed between said gating apparatus and said ion trap.

8. The ion delivery system as recited in claim 7, wherein said aperture lens comprises an aperture that is aligned with the ion lenses of said scaling apparatus and said gating apparatus for receiving at least a portion of each of said pulses focussed toward said aperture lens, said aperture lens comprising a deflection surface about said aperture.

9. The ion delivery system as recited in claim 8, wherein said deflection surface slopes away from said focussing apparatus from said aperture.

10. A mass spectrometer comprising:

(a) an ionization source for producing a stream of ions from a sample compound to be analyzed;

(b) an ion trap;

(c) gating apparatus adapted to be placed between said ion guide and said ion trap for receiving said ion stream and projecting ions from said ion stream in pulses toward said ion trap; and

(d) scaling apparatus operatively connected to said gating apparatus for selectively controlling the number of ions in each of said pulses delivered to said ion trap.

11. The mass spectrometer as recited in claim 10, wherein said scaling apparatus comprises at least one ion lens apparatus.

12. The mass spectrometer as recited in claim 10, wherein said gating apparatus comprises at least one ion lens apparatus.

13. The mass spectrometer as recited in claim 10, wherein said scaling apparatus comprises:

(a) a first ion lens adapted to be located between said ion guide and said gating apparatus; and

(b) a second ion lens adapted to be located betweens said gating apparatus and said ion trap and for functioning in conjunction with said first ion lens.

14. The mass spectrometer as recited in claim 13, further comprising an aperture ion lens adapted to be placed between said second ion lens and said ion trap.

15. The mass spectrometer as recited in claim 10, wherein said scaling apparatus is a ion focussing lens adapted to be placed between said ion guide and said gating apparatus and said gating apparatus comprises an ion lens that is in a cooperating ion focussing relationship with said ion focussing lens for focussing said pulses.

16. The mass spectrometer as recited in claim 15, further comprising an aperture lens adapted to be placed between said gating apparatus and said ion trap.

17. The mass spectrometer as recited in claim 16, wherein said aperture lens comprises an aperture that is aligned with the ion lenses of said scaling apparatus and said gating apparatus for receiving at least a portion of each of said pulses focussed toward said aperture lens, said aperture lens comprising a deflection surface about said aperture.

18. The mass spectrometer as recited in claim 17, wherein said deflection surface slopes away from said focussing apparatus from said aperture.

19. A method of analyzing ions in a mass spectrometer that includes an ion trap, comprising:

(a) guiding a stream of ions toward said ion trap;

(b) gating said stream for delivering said stream of ions in pulses of a predetermined time duration to said ion trap mass analyzer;

(c) adjustably controlling the quantity of ions in each of said pulses to be delivered to said ion trap.

20. The method as recited in claim 19, wherein said step of adjustably controlling the quantity of ions in each of said pulses comprises adjustably focusing said ion stream through the opening of an aperture lens located in from of said ion trap mass analyzer so that a predetermined portion of said ion stream passes through said aperture for each of said pulses.